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## 1.0 PURPOSE OF AND NEED FOR A PROPOSED ACTION

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MDOT and the U.S. Federal Highway Administration (FHWA) are studying improvements to US-131, between the Indiana Toll Road in Elkhart County, Indiana and a point one mile north of Cowling Road in St. Joseph County, Michigan. On this 17-mile segment of US-131, the existing road varies between two-lane, four-lane and four-lane divided/boulevard cross-sections (see **Figure 1.1**). Motorists experience a variety of roadway inefficiencies that vary by type and location throughout the study corridor.

### 1.1 Purpose of a Proposed Action

The purpose of this study is to identify potential alternatives that:

- Support the safe and efficient movement of goods and people
- Cost effectively support the economic growth of the region and the state, by improving traffic operations within the study corridor.

### 1.2 Need for a Proposed Action

Several factors support the need for potential US-131 improvements within the study corridor. These include:

- Assurance of sufficient capacity to accommodate future traffic growth
- Improvement of roadway inefficiencies
- Improvement of US-131 highway operations

Within the Village of Constantine, commercial truck traffic is 37 percent higher than the state rural two-lane average, and is anticipated to remain that way through the study year 2030. As passenger and commercial traffic volumes continue to grow at a rate of 1.4 percent based on traffic projections, operational conditions will begin to degrade. Without improvements, some parts of the corridor will experience Level-of-Service (LOS) E and certain intersections and roadway segments will experience periodic backups.

**Level-of-Service:** Level-of-service is rated A to F and is a qualitative measure of the operational traffic conditions as perceived by a motorist. LOS A is best and represents free flow traffic conditions. LOS F is perceived by the average motorist as heavy congestion. Think of LOS like school grades; “A” is great, and “F” is failing.

As illustrated in **Figure 1.1** and **Figure 1.2**, projected 2030 traffic volumes for the Study Area indicate that roadway LOS between Dickinson Road and M-60 will degrade to LOS E during the peak hour under the No-Build condition. The peak hour is the 60-minute period in the AM or PM in which the largest volume of travel is generally experienced (e.g. rush hour). The design hour is an hour with traffic volumes that represent a reasonable value for designing the geometric and control element of a facility. Under Practical Alternative 5 (the Preferred Alternative) LOS C and D is projected between Dickinson Road and M-60. Forecasted year 2030 traffic volumes indicate that AADT volumes will range from

approximately 15,400 to 36,500 along US-131 in the Study Area. As illustrated in **Figure 1.1**, in 2030, the section of roadway between Dickinson Road and Quarterline Road is expected to experience the heaviest congestion due to the existing geometric constraints of the roadway (parts of it are a two lane facility with substandard shoulder widths, while the other part is an urban section with several stop lights) and high commercial truck volumes. Although this segment of US-131 is expected to degrade to LOS E during the peak hour by year 2030, it should be noted that it will operate at a desirable LOS during the majority of the day.

*Highway Operations and Conflict Points:* The existing cross-section and number of lanes on US-131 varies throughout this study corridor. There are approximately ten miles of two-lane roadway in the study corridor, located in two segments south of M-60. These are the only two-lane sections of US-131 south of Cadillac, Michigan.

The US-131 system operations are further compromised by a large number of commercial driveways and several signalized and un-signalized intersections in the City of Three Rivers. Motorists heading south on US-131 from north of Three Rivers travel a rural four-lane divided segment of highway, where access is controlled and driveways are prohibited. However, upon entering the north end of the study corridor, they first encounter a traffic signal at Wilbur Road, followed by a narrow median, four-lane divided section of roadway, with periodic direct left turn movements and an abundance of driveways. The next segment of roadway operates with parallel opposing left turn lanes within the City of Three Rivers. There is relatively dense commercial development along this segment of US-131. The high volumes of vehicle trips generated by commercial land uses in this area create more disruption in traffic flow than is typical for most of US-131 in southern Michigan.

*Commercial Traffic Volumes During the Peak Hour:* Within the Village of Constantine, the 2030 projected commercial truck volumes for the peak hour contribute to the operational concerns within the US-131 Corridor. During the p.m. peak hour, commercial volumes within Constantine are projected to reach 290 commercial vehicles out of approximately 2800 total vehicles, or 10.4% of total design hour traffic. Throughout the remainder of the US-131 study corridor, the 2030 design hour commercial truck volumes are projected to be approximately 240 vehicles out of the projected average of 2630 total vehicles, or about 9% of total design hour volumes.

*Daily Commercial Traffic Volumes:* The forecasted average daily traffic volume for the study corridor is 20,200 with 2,630 (13% of the Average Annual Daily Traffic (AADT)) forecasted as average daily commercial volume for the year 2030. This volume is greater in the Village of Constantine, where truck volumes are projected to be about 2800 vehicles per day, or about 15% of the total 18,760 forecasted 2030 daily vehicles in the Village. The truck volumes are 37% higher in the village than the statewide rural two-lane trunk line average.

*Wide-Load Commercial Vehicles:* Numerous wide-load commercial vehicles utilize this segment of US-131, impeding traffic flow and reducing passing opportunities. Many of these wide load vehicle trips are generated by several manufactured housing assembly facilities located immediately south of the Study Area and by manufactured housing dealers located within the Study Area. Major housing manufacturers identified minimum total shipments of eight to 20 housing units per day traveling north on this segment of US-131. Commercial through traffic on US-131 is projected to grow, based on projected growth of the metropolitan areas of Kalamazoo and Grand Rapids, which are served by US-131.

*Downtown Constantine Concerns:* Traffic operations are adversely affected by on-street parallel parking on both sides of US-131, between Water Street and Riverside Drive in the Village of Constantine, as well as associated pedestrian crossings. The above-average volumes of commercial truck traffic have resulted in Constantine residents expressing concerns about pedestrian safety within the downtown area, as well as excessive traffic noise and vibration.

*Crash Analysis:* Between February 2003, and December 2005, the US-131 study corridor from the Indiana State Line to one half mile south of US-12 experienced a total of 42 crashes, including 16 crashes resulting in injury (see **Figure 1.3**). From one half mile south of US-12 to the north junction of M-60, US-131 experienced a total of 319 crashes, including 114 crashes resulting in injury, while from the north junction of M-60 to northbound US-131BR in Three Rivers, US-131 experienced a total of 69 crashes, including 24 crashes resulting in injury. The entire study corridor had a total of 430 crashes, of which 154 resulted in injury. This compares to a total of 490 crashes, including an estimated 114 crashes resulting in injury, between January 1, 2000 and December 31, 2002. While the overall number of crashes has decreased in the most recent three year period by 12%, the number of injury crashes has increased by 35% in the same period.

Recent roadway improvements have been made at some locations along US-131 that have previously experienced higher crash rates. It is anticipated that as passenger and commercial traffic volumes continue to grow, crash exposure will continue to increase.

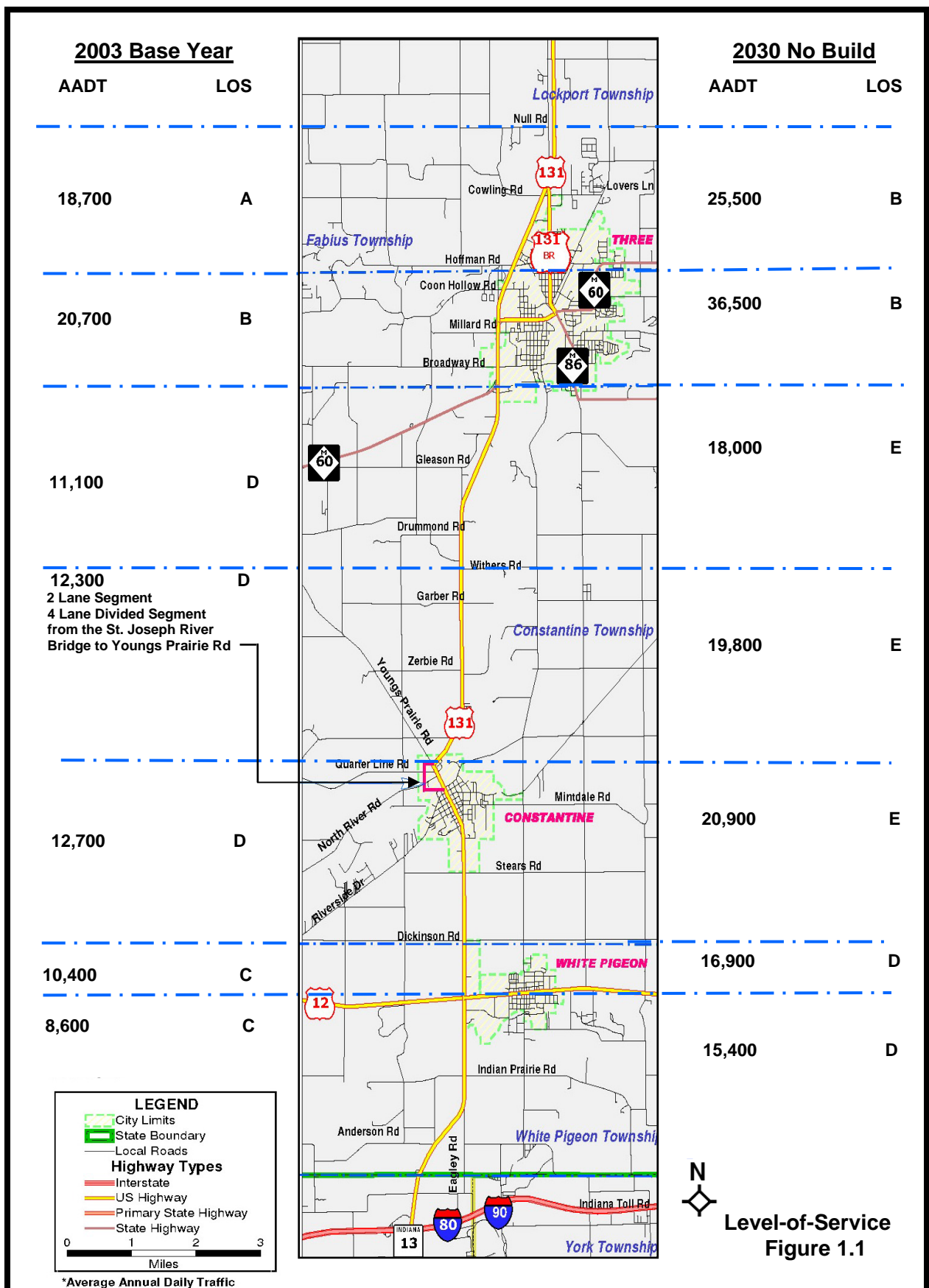
*Geometric Operations:* Within the Study Area, US-131 was first constructed in the 1920s and 1930s, when traffic volumes were much lower than current conditions. Although there have been many subsequent improvements, the geometry of selected intersections continues to constrain traffic operations within the corridor, especially the operations of large trucks hauling manufactured housing units. Examples include intersections that would not meet MDOT's current design standards such as cross-road acute angle intersections and the signalized right angle turn on US-131 in Constantine.

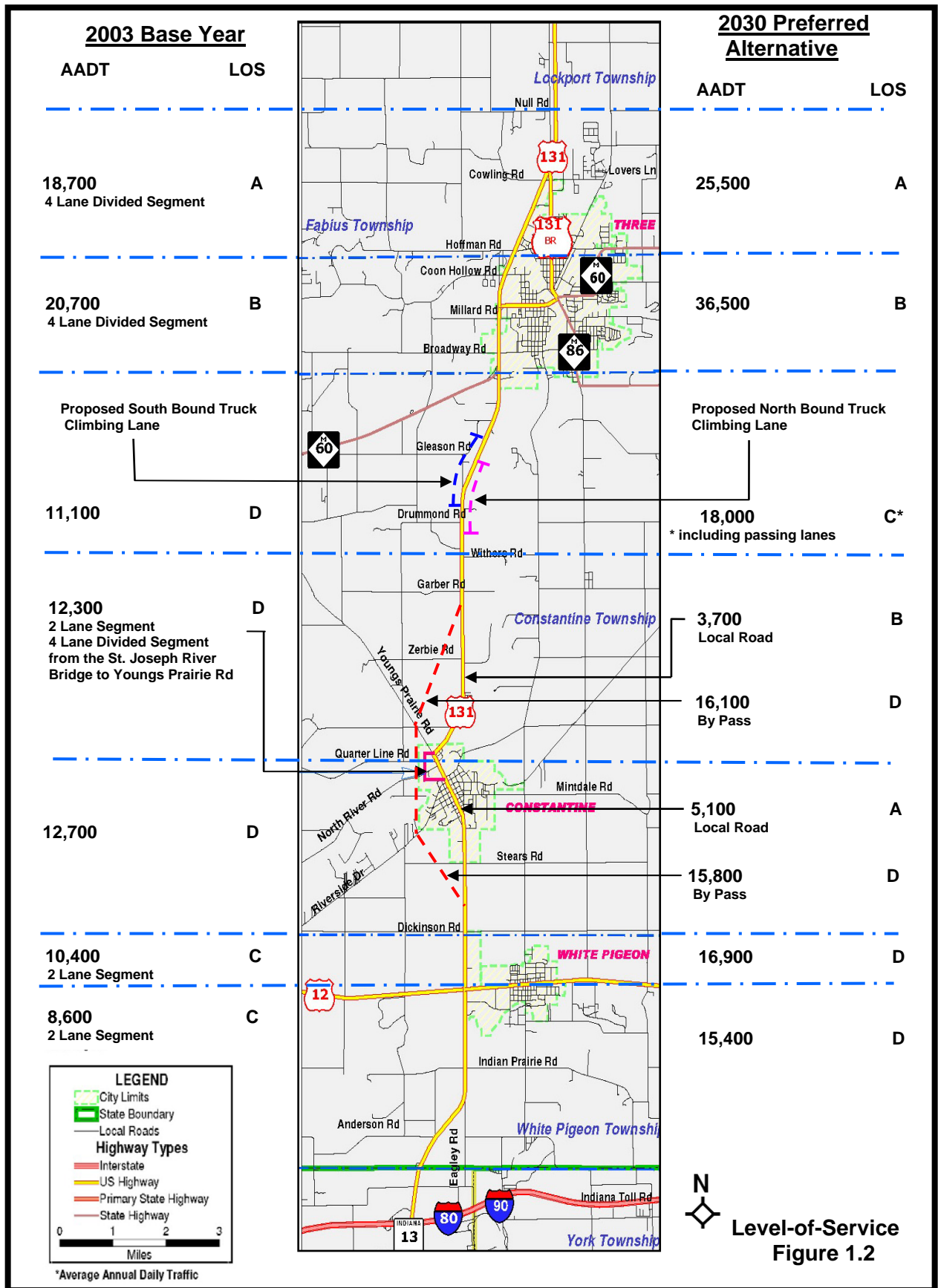
*Passing Limitations:* Limited passing opportunities on the existing two-lane segments of US-131 also contribute to roadway inefficiencies. The area north of the Village of Constantine has rolling terrain, with the steepest grades located between Drummond Road and Gleason Road. The climbing speeds of heavy trucks slow traffic at this location. Sight distances are limited, requiring that most of this one-mile segment of US-131 be posted as a "No Passing" zone. Other segments of US-131 posted as "No Passing" include approximately one mile through the Village of Constantine, and approximately three-quarters of a mile north of the Indiana Toll Road.

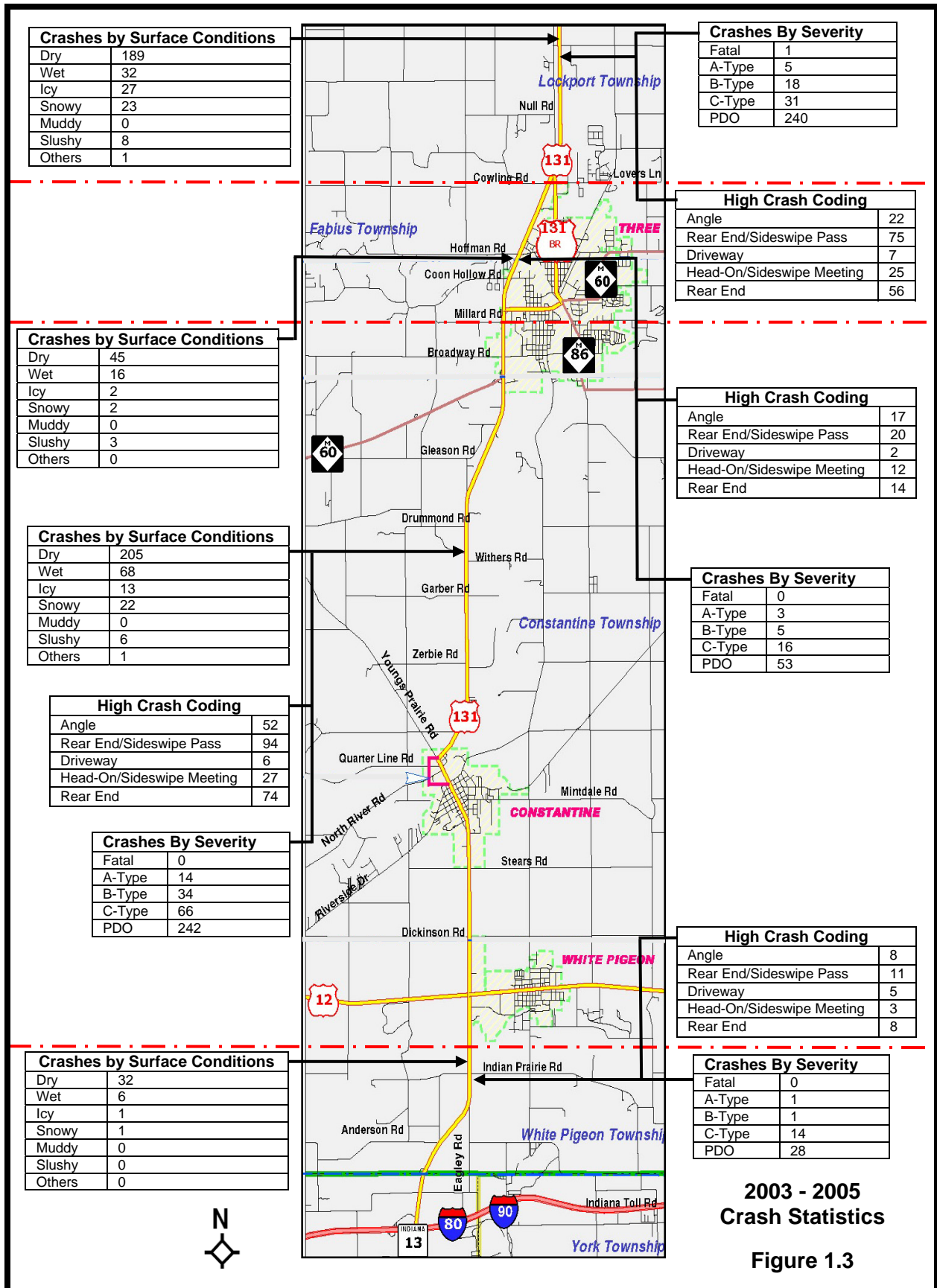
## **1.3 Summary**

As outlined above, the purpose of and need for potential US-131 improvements is key in the evaluation of alternatives and the ultimate selection of a Preferred Alternative. Commercial truck traffic will remain more than 37% higher within the Village of Constantine when compared to the state rural two-lane average. Passenger and commercial traffic volumes continue to grow and conditions will begin to degrade. Under the No-Build condition, US-131 between Dickinson Road and Quarterline Road will experience LOS E and certain intersections and roadway segments may experience periodic backups and other roadway inefficiencies.

In recommending an alternative that best meets the purpose of and need for the project and has the least impact on the environment, the Final Environmental Impact Statement takes into account: 1) the alternatives and associated environmental analyses presented in the November 2004 Draft Environmental Impact Statement (DEIS), 2) recommendations made in the published DEIS, 3) the March 29, 2005 public hearing on the DEIS and 4) federal, state and local agency comments. Public comments received that helped in the selection process included: affects fewer residents, and solves the traffic congestion, noise and vibration issues.







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## 2.0 ALTERNATIVES CONSIDERED

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This section discusses the alternative development, refinement, and evaluation process that led to the selection of PA-5 as the Preferred Alternative for the US-131 Improvement Study project. Although all of the Practical Alternatives are identified in this section, only the No-Build and PA-5, the Preferred Alternative, are fully discussed. The foldout map located in **Appendix C** illustrates the Study Area and the Practical Alternatives evaluated.

In 1996, MDOT organized the US-131 Master Plan Committee comprised of local stakeholders in Kalamazoo and St. Joseph Counties. The Master Plan Committee helped MDOT with a corridor location study completed in 1997. This study established support and consensus for a preferred US-131 improvement corridor in St. Joseph County, but determined that there was no consensus for a preferred corridor within Kalamazoo County.

In 1999, MDOT began a study to evaluate options for constructing a US-131 bypass around the Village of Constantine in St. Joseph County. Traffic analysis and a desire to enhance system connectivity led to the extension of the bypass study to include all of US-131 between the Indiana Toll Road and M-60 in February, 2000. In response to resolutions passed by Fabius Township, the City of Three Rivers and Lockport Township the study was again extended further north, in March 2001, to north of the city limits of Three Rivers. The revised northern terminus is a point one mile north of Cowling Road in St. Joseph County, Michigan. At this location US-131 is a four-lane divided controlled access facility, providing a more logical terminus as US-131 is a four-lane facility from this point northward to Cadillac, Michigan.

The final revision in 2007 kept the Study Area boundaries intact, but only looked at improvements for the Preferred Alternative in Michigan (no improvements in Indiana).

### 2.1 History of the Alternatives Evaluation

Four preliminary Illustrative Alternatives categories were developed for evaluation within the Study Area. Following public comment and further analysis, these preliminary Illustrative Alternatives were refined and combined to provide six Practical Alternatives (PA-1, PA-2, PA-3, PA-4, PA-5 and PA-5 Modified). These Practical Alternatives and the prior Illustrative Alternatives were fully discussed in the Draft Environmental Impact Statement published in November 2004, as were a full range of Transportation Systems Management alternatives.

In July 2000, the Stakeholder Advisory Committee met with MDOT to identify and prioritize goals for the US-131 Improvement Study. The following summarizes the goals identified during these strategic goal-setting sessions:

- Use the existing US-131 Corridor as much as possible
- Minimize the loss of homes, businesses, farms, communities and environmental impacts
- Use overpasses for local roads if possible for freeway alternatives so that the community is not divided from east to west and access is provided for emergency vehicles, school traffic and industrial development



- Create an easily maintainable highway
- Minimize traffic noise
- Landscape the highway with trees, shrubs and wildflowers if possible without increasing the amount of right-of-way necessary
- Relieve congestion on US-131 within the study corridor
- Do not preclude future US-131 improvements north of Three Rivers

These goals serve as guiding principles in the development of the US-131 improvement alternatives and selection of a Preferred Alternative.

In developing the Practical Alternatives, components of the Illustrative Alternatives were refined and combined into four continuous freeway alignments extending from the Indiana Toll Road to the northern terminus of the project. This analysis resulted in freeway Practical Alternatives that represent the best attributes of all earlier alignments. PA-5 and PA-5 MOD were added to the study as part of the NEPA process to include evaluation of all viable facility types for meeting the project goals and the purpose of and need for a proposed action. **Table 2.1** summarizes the engineering components and costs of the Practical Alternatives.

## 2.2 Alternatives Considered and Dismissed

### 2.2.1 No-Build Alternative

The No-Build Alternative was dismissed because it did not satisfy the purpose of and need for a proposed action (see *Disadvantages* below for further details).

The No-Build Alternative would maintain the existing US-131 facility with its current lane configuration. With this alternative, routine maintenance would occur on an as-needed basis. Intersection improvements which are already committed would be implemented as funding becomes available.

#### Advantages of the No-Build:

- Least costly of the alternatives considered
- Minimizes social, economic and environmental impacts
- Requires no additional right-of-way

#### Disadvantages of the No-Build:

- Does not satisfy the purpose of and need for a proposed action
- Does not remove truck traffic from the Village of Constantine
- Would not improve vehicular traffic or movement of goods in the US-131 corridor
- System or roadway inefficiencies identified in **Section 1.0** are not addressed
- Operation of the signalized intersection and ninety-degree turn in Constantine will continue to degrade with increasing truck traffic
- Does not address the numerous access points of M-60 or the crash rates within this area

**Table 2.1 Practical Alternatives Comparative Matrix**

	No-Build	PA-1	PA-2	PA-3	PA-4	PA-5	PA-5 MOD
Length, in miles (Toll Road to North Terminus)	17.2	17.6	17.7	17.2	18.3	17.4	17.6
Length of New Service Drives, in miles	0	14.4	23.1	14.2	11.2	N/A	N/A
At-Grade Intersections**	0	6	3	3	3	9	9
Grade Separations	0	12	15	15	15	0	0
Interchanges Constructed	0	3	4	4	4	0	0
Local Roads Terminated with a Cul-de-Sac	0	5	6	7	6	3	2
Approximate length of new/reconstructed river crossings, in feet:							
White Pigeon River	N/A	135	210	160	160	N/A	N/A
St. Joseph River	N/A	870	870	870	1325	870	870
Rocky River	N/A	110	110	110	110	N/A	N/A
Total New ROW Acres Required for Construction	0	845*	925*	878*	914*	170*	59*
Cost (Millions of 2004 Dollars)***	0	\$269	\$461	\$289	\$303	\$30*	\$25
<p>* Does not include indirect farmland impacts through the relocation of farm buildings, as discussed in Section 4.2, Farmland Impacts. There is no relocation of farm buildings for PA-5 or PA-5 MOD. Also does not include any safety improvements to existing US-131 in downtown Three Rivers.</p> <p>** Except for the bypass of Constantine, PA-5 and P-5 MOD have the same number of at-grade intersections as existing US-131.</p> <p>*** Cost includes early preliminary engineering, preliminary engineering, construction engineering, pavement, earthwork, structures and right-of-way.</p>							

**2.2.2 Practical Alternative 1 (PA-1) (freeway)**

This alternative was dismissed because traffic volumes did not warrant a freeway cross-section, there was significant cost vs. benefit gained for mobility and because it would have substantial environmental impacts.

Practical Alternative 1 (PA-1) begins at the existing four-lane section of US-131 at the entrance ramp to the Indiana Toll Road, where it widens to a five-lane roadway and follows existing US-131 north to Dickinson Road. North of Dickinson Road, the roadway transitions from a five-lane section to a four-lane limited-access freeway and leaves the existing US-131 alignment, curving to the northwest in order to bypass the Village of Constantine.

North of Millers Mill Road, PA-1 curves to the east connecting with existing US-131 and continues north along the existing US-131 alignment to Drummond Road. PA-1 continues north at Drummond Road and connects with M-60 approximately one-half mile west of the existing intersection of US-131 and M-60. At Broadway Road, PA-1 turns northeast and meets the existing US-131 alignment near Coon Hollow Road where it transitions from a rural to an urban freeway facility. After crossing the Rocky River, PA-1 transitions back to a rural freeway and curves north, then west near Cowling Road, joining existing US-131 at the northern project terminus.

The following are the principal engineering advantages and disadvantages of PA-1 when compared to the other Practical Alternatives.

*Advantages of PA-1:*

- Utilizes existing bridge crossing at the White Pigeon River
- Least costly freeway Practical Alternative (\$269 million)
- Interchange at Quarterline Road provides Constantine access via existing intersection
- Perpendicular crossing of the St. Joseph River
- Improved intersection geometrics
- Reduces truck traffic and its associated noise and vibration in downtown Constantine

*Disadvantages of PA-1:*

- Railroad crossing delay due to the five-lane roadway at-grade crossing of the Norfolk & Southern Railroad south of the Village of White Pigeon
- Six at-grade intersections
- Requires five local roads to be terminated with a cul-de-sac
- Substantially more costly than PA-5 or PA-5 MOD

**2.2.3 Practical Alternative 2 (PA-2) (freeway)**

This alternative was dismissed because traffic volumes did not warrant a freeway cross-section, there was significant cost vs. benefit gained for mobility, and it would require the most ROW takes of all the alternatives. It would also have substantial environmental impacts.

Practical Alternative 2 (PA-2) follows the same alignment as PA-1 up to Drummond Road, north of the Village of Constantine, except that it transitions from a five-lane roadway to a four-lane limited access freeway north of Anderson Road. PA-2 then continues along the existing US-131 alignment to the north terminus of the project one mile north of Cowling Road. North of King Road, PA-2 transitions from a rural to an urban freeway facility (a longer urban freeway section than proposed for PA-1, PA-3 and PA-4) and is proposed to be depressed approximately 20 feet below existing US-131. This depression allows existing local roads to cross US-131 without being raised and allows service drives to be located directly in front of businesses currently fronting on US-131. After crossing the Rocky River, PA-2 transitions back to a rural freeway until it connects with existing US-131 one mile north of Cowling Road.

The following are the principal engineering advantages and disadvantages of PA-2 when compared to the other Practical Alternatives.

#### Advantages of PA-2:

- Utilizes existing White Pigeon River crossing
- Utilizes existing US-131 corridor to the greatest extent of all freeway alternatives
- Interchange at Quarterline Road provides Constantine access via existing intersection
- Perpendicular crossing of the St. Joseph River
- Improved intersection geometrics
- Reduces truck traffic and its associated noise and vibration in downtown Constantine

#### Disadvantages of PA-2:

- Most expensive Practical Alternative (\$461 million)
- Most difficult for staged implementation
- Most difficult for maintenance of traffic during construction
- Most costly for long-term maintenance
- Requires new bridge for service drive over the White Pigeon River
- Requires most total ROW due to service drive requirements and adjoining property setback requirements (925 acres)
- Requires most service drives (23.1 miles)
- Requires six local roads to be terminated with a cul-de-sac

### **2.2.4 Practical Alternative 3 (PA-3) (freeway)**

This alternative was dismissed because traffic volumes did not warrant a freeway cross-section, there was significant cost vs. benefit gained for mobility and because it would have substantial environmental impacts.

Practical Alternative 3 (PA-3) begins as a five-lane roadway, as described above for PA-1, at the Indiana Toll Road and follows existing US-131 northeast to Anderson Road. At Anderson Road PA-3 transitions from a five-lane roadway to a four-lane limited access freeway, heading north to parallel existing US-131 approximately one-half mile to the west. North of Dickinson Road PA-3 curves west, using the same alignment as PA-1 and PA-2 over the St. Joseph River. PA-3 continues along the PA-1 alignment to the northern project terminus.

The following are the principal engineering advantages and disadvantages of PA-3 when compared to the other Practical Alternatives.

#### Advantages of PA-3:

- Utilizes existing topography north of Garber Road for screening/separation
- Shortest distance from south to north terminus (17.2 miles) of all Build Alternatives
- Interchange at Quarterline Road provides Constantine access via existing intersection
- Perpendicular crossing of the St. Joseph River
- Improved intersection geometrics
- Reduces truck traffic and its associated noise and vibration in downtown Constantine

#### Disadvantages of PA-3:

- Requires seven local roads to be terminated with a cul-de-sac
- More expensive than PA-1 and significantly more expensive than PA-5 and PA-5 MOD

### **2.2.5 Practical Alternative 4 (PA-4) (freeway)**

This alternative was dismissed because traffic volumes did not warrant a freeway cross-section, there was significant cost vs. benefit gained for mobility, and because it would have substantial environmental impacts, including the greatest floodplain crossing length at the St. Joseph River (approximately 1325').

Practical Alternative 4 (PA-4) follows the same alignment with the same roadway typical sections as PA-3 from the Indiana Toll Road north to Dickinson Road. At Dickinson Road PA-4 heads northwest to bypass the Village of Constantine approximately one-half mile west of the village limits. At North River Road, PA-4 curves northeast, then heads north between Zerbe and Garber Roads. North of Drummond Road PA-4 turns northeast and runs parallel to existing US-131 to the west. At Gleason Road, PA-4 heads north to intersect M-60 just east of the PA-1/M-60 proposed interchange location. North of Broadway Road PA-4 joins the PA-1/PA-3 alignment extending to the north project limits.

The following are the principal engineering advantages and disadvantages of PA-4 when compared to the other Practical Alternatives.

#### Advantages of PA-4:

- Least length of service drives (11.2 miles)
- Perpendicular crossing of the St. Joseph River
- Utilizes existing topography to greatest extent
- Improved intersection geometrics
- Reduces truck traffic and its associated noise and vibration in downtown Constantine

#### Disadvantages of PA-4:

- Greatest floodplain crossing length at the St. Joseph River (approximately 1325')
- Requires six local roads to be terminated with a cul-de-sac
- Requires access to the Village of Constantine through a residential street on Youngs Prairie Road

### **2.2.6 Practical Alternative 5 Modified (PA-5 MOD) (two-lane non-freeway)**

This alternative was dismissed because it did not satisfy the Purpose of and Need for a Proposed Action. PA-5 MOD would not completely remove through auto and truck traffic out of Constantine. It also has more signalized intersections than any of the other alternatives, hence the most travel time required to reach motorist destinations of any of the Build Alternatives, because of delays due to traffic flow interruptions.

Practical Alternative 5 Modified (PA-5 MOD) is on the same alignment as PA-5 except at the north end of the Village of Constantine bypass, between North River Road and Garber Road. At North River Road, PA-5 MOD curves northeast, merging with existing US-131 at Youngs Prairie Road. A new four-legged signalized intersection is proposed where US-131 connects with the existing US-131 alignment. From this point north, PA-5 MOD remains as a two-lane section and utilizes the existing US-131 alignment to Garber Road. North of Garber Road to the study limits, PA-5 MOD is the same alternative as PA-5.

The following cross-roads are not proposed to be carried across PA-5 MOD: Stears Road and King Road. Access is proposed to be maintained to all other crossroads.

Advantages of PA-5 MOD:

- Utilizes more of the existing alignment than any Build Alternative
- Improved intersection geometrics
- Perpendicular crossing of the St. Joseph River
- Least environmentally intrusive Build Alternative
- Limited access bypass of Constantine
- Least costly Practical Build Alternative
- Least amount of local roads to be terminated with a cul-de-sac
- Least amount of ROW required of all Build Alternatives
- Reduces truck traffic and its associated noise and vibration in downtown Constantine
- Removes right angle turn for US-131 traffic in Constantine with minimal ROW

Disadvantages of PA-5 MOD:

- Requires two local roads to be terminated with a cul-de-sac
- Requires access to the Village of Constantine from the bypass via a new roadway
- Lower design speed for through traffic than freeway alternatives
- More signalized intersections than any other Practical Alternative
- Most travel time required to reach motorist destinations of any of the Build Alternatives, because of delays due to traffic flow interruptions
- Lowest posted speeds and most traffic interruptions of all the Build Alternatives

**Table 2.2 Comparison of Impacts for Practical Alternatives**

Alternatives	Total Relocations	Residential Relocations	Commercial Relocations	Community Facility Relocations	Agricultural Parcel Splits	Agricultural Acres	Wetland Acres	Wetland Sites	Observed Threatened & Endangered Species	Potential Historic Sites	Cost (millions,2007)**
<b>No-Build</b>	No Relocations				No Impacts		No Impacts		No Impacts	No Impacts	
	0	0	0	0	0	0	0	0	0	0	\$0
<b>PA-1</b>	71	59	12	0	18	492*	16.3	15	0	2	\$269
<b>PA-2</b>	177	110	64	3	10	512*	22.4	13	0	5	\$461
<b>PA-3</b>	95	84	11	0	17	571*	23	16	0	2	\$289
<b>PA-4</b>	127	113	13	1	13	563*	57.9	19	0	1	\$303
<b>Preferred Alternative (PA-5)</b>	12	12	0	0	6	132	1.5	2	0	0	\$31
<b>PA-5 MOD</b>	8	7	1	2	2	39	.5	2	0	0	\$25
* Does not include indirect farmland impacts from the relocation of farm buildings, as discussed in <b>Section 4.2, Farmland Impacts</b> .											
** Cost estimates include preliminary engineering, construction engineering, pavement, earthwork, structures and right-of-way for the Constantine bypass and truck climbing lanes only.											

## 2.3 Selection of the Preferred Alternative

### 2.3.1 Practical Alternative PA-5 (*two-lane non-freeway*)

Analysis of the Practical Alternatives included comparisons between the Practical Freeway Build Alternatives as well as the non-freeway Practical Alternatives to the No-Build Alternative. The merit of each alternative was assessed based on the Purpose of and Need for the Project as outlined in **Section 1.0, Purpose of and Need for the Proposed Action**, the environmental impacts of the alternative and comments from stakeholders and the public. Based on this evaluation, MDOT and the Federal Highway Administration (FHWA) have concluded that PA-5 should be the Preferred Alternative for design and construction.

The Preferred Alternative (PA-5) meets the Purpose of and Need for the project as well or better than other Practical Alternatives. It meets the purpose of providing safe and sufficient movement of goods and people. The cost effectiveness of the Preferred Alternative supports the economic growth of the region, and the State by improving traffic operations within the Study Area at a lower cost than freeway alternatives, while still improving the movement of goods and people through the corridor with minimal environmental impacts.

The Preferred Alternative will provide a bypass of the Village of Constantine, while still utilizing more of the existing alignment than any other freeway alternative except PA-2. It will require much less new ROW than the freeway alternatives and is less environmentally intrusive than all freeway alternatives. The Preferred Alternative will reduce truck traffic and its associated noise and vibration in downtown Constantine and will improve intersection geometrics. The Preferred Alternative will have positive impacts on pedestrian and non-motorized vehicle movement in downtown Constantine. Decreasing commercial traffic will allow pedestrians and non-motorized vehicles easier travel through downtown Constantine.

The Preferred Alternative begins as a two-lane facility from the Indiana/Michigan State Line and follows existing US-131 north to Dickinson Road as illustrated in **Figure 2.1**. All existing roads that would cross the Preferred Alternative will have at-grade intersections with full access, with the exception of Stears Road (the eastern leg of the proposed intersection would “T” into the bypass, while the western leg of the proposed intersection would be cul-de-saced) and Millers Mill Road (cul-de-saced to the east of the bypass). Anderson Road would be realigned to achieve a more optimal intersecting angle, as would Eagley Road. While these two intersection improvements are cleared as part of this FEIS, the cost to improve these intersections is not included in the \$31 million dedicated funding for the Preferred Alternative. The PA-5 alignment utilizes the existing US-131 bridge crossing of the White Pigeon River. An at-grade crossing of the Norfolk & Southern Railroad north of Indian Prairie Road would also be maintained. North of Dickinson Road, PA-5 consists of a two-lane roadway section and leaves the existing US-131 alignment, curving to the northwest in order to bypass the Village of Constantine. Existing US-131 would be realigned south of Stears Road to create a “T” intersection with the new US-131 bypass.

North of Stears Road, PA-5 follows the northbound roadway alignment of PA-1 and PA-2, while maintaining at-grade intersections at Riverside Drive, North River Drive, Youngs Prairie, Quarterline Road and Zerbe Road. This alternative requires a new two-lane bridge crossing of the St. Joseph River east of Blue School Road, at the same location as PA-1, PA-2 and PA-3. The new St. Joseph River structure will be 870 feet to span the floodplain and wetlands. The new structure is expected to be six spans with two piers in the river and three piers in the floodplain. In this area, Quarterline Road would be realigned to “T” into the existing US-131 and Youngs Prairie intersection, within the Village of Constantine. As noted above, Millers Mill Road would be cul-de-saced at the PA-5 alignment. Youngs Prairie northwest and southeast of Millers Mill would be realigned and remain open and intersect with PA-5. Zerbe Road would also be realigned and remain open and intersect with PA-5. North of Zerbe Road, PA-5 curves northeast merging with the existing US-131 alignment prior to Garber Road. At this location, existing US-131 would be realigned to provide a more optimal intersecting angle with the new US-131/PA-5 alignment.

The US-131 bypass around the Village of Constantine (from north of Stears Road to south of Garber Road), would be designated as US-131. The existing US-131 alignment would be maintained by MDOT and redesignated as US-131 Business Route (US-131 BR).

From south of Garber Road northward, PA-5 continues as a two-lane section and utilizes the existing US-131 alignment to north of Gleason Road. However, a single 12-foot wide truck climbing lane would be added in each direction north of Garber Road. The northbound lane would extend starting approximately 3,000-feet starting south of Drummond Road to just north of King Road. The southbound truck climbing lane would extend approximately 3,800 feet starting midway between Gleason and King and extending to its terminus south of



King Road. Just south of M-60 the roadway would transition from a two-lane to a five-lane section through M-60.

North of M-60, PA-5 follows the existing US-131 alignment from Broadway to Hoffman Road, with conversion of the existing four-lane median (dual turn lanes) section to a five-lane section at this location. North of Hoffman Road, PA-5 transitions back to a four-lane divided cross-section and continues on the existing US-131 alignment to the north project limits.

Where PA-5 utilizes the existing US-131 alignment, minor improvements will be implemented to bring the existing alignment up to current MDOT standards (i.e., 8 foot shoulders, 12-foot lanes). The right-of-way (ROW) width for PA-5 varies throughout the corridor. South of the bypass, the ROW varies between 66 and 100 feet. Along the new bypass, the ROW is 200 feet and typical ROW north of the bypass to M-60 is 120 feet. North of M-60 the ROW is typically 200 feet.

*Advantages of PA-5:*

- Utilizes more of the existing alignment than any freeway alternative except PA-2
- Improves intersection geometrics
- Perpendicular crossing of the St. Joseph River
- Less environmentally intrusive than all freeway alternatives
- Requires much less new ROW than the freeway alternatives
- Limited access bypass of Constantine
- Less costly than all freeway Build Alternatives
- Reduces truck traffic and its associated noise and vibration in downtown Constantine

*Disadvantages of PA-5:*

- Requires three local roads to be terminated with a cul-de-sac
- More environmentally intrusive than PA-5 MOD
- More costly than PA-5 MOD
- Lower design speed for through traffic than freeway alternatives
- More travel time required to reach motorist destinations than any of the Build Alternatives, except PA-5 MOD, because of delays due to traffic flow interruptions
- Lower posted speeds and more traffic interruptions compared to the freeway alternatives

## **2.4 Design Criteria**

Design Standards were developed for the Practical Alternatives discussed in this section. The criteria adhere to Michigan Department of Transportation (MDOT) and American Association of State Highway and Transportation Officials (AASHTO) guidelines and are depicted in **Table 2.3**.

Typical cross-sections for the existing roadway are depicted in **Figure 2.2**, while the proposed typical cross-sections for the Preferred Alternative roadway types are depicted in **Figure 2.3**. The Preferred Alternative meets or exceeds the desirable design criteria for two-lane, limited access, facility types, as applicable.

## **2.5 Construction Phasing**

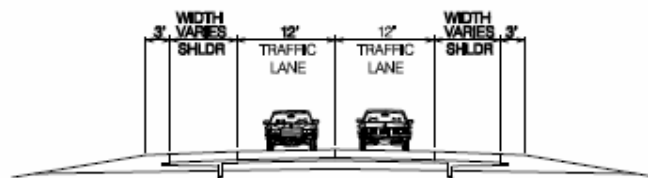
The Preferred Alternative (PA-5) may require phased implementation due to right-of-way and mitigation requirements as well as requirements for maintaining traffic flow during construction. Intersections, bridge crossovers, cul-de-sacs, required local road connections and service drives will be upgraded by location priority. Segments experiencing high crash rates, new development and/or less than desirable level-of-service or roadway inefficiencies could be among those given priority for right-of-way acquisition and construction.

Space Holder Figure 2.1 sheet 1 of 2

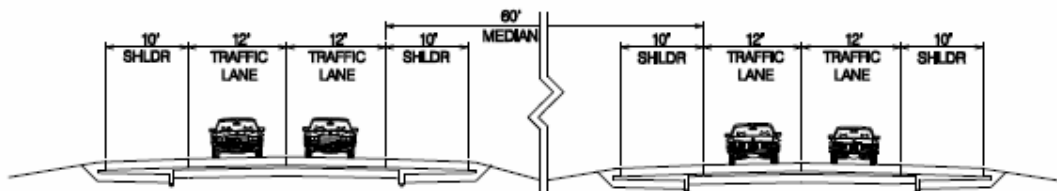
Space holder figure 2.1, 2 of 2

**Table 2.3 Build Alternative Design Criteria**

<b>Design Element</b>	<b>Two-Lane Section</b>	<b>Five-Lane Section</b>	<b>Four-Lane Freeway (Rural)</b>	<b>Four-Lane Freeway (Urban)</b>
Design Speed (mph)	60	60	75	75
Design Level-of-Service	D	D	D	D
Roadway Classification	Arterial	Arterial	Rural Freeway	Urban Freeway
<b>Horizontal Alignment</b>				
Minimum Radius	1,263'	1,263'	3,940' Desirable 2,300' Minimum	3,940' Desirable 2,300' Minimum
Minimum Length of Curve	N/A	N/A	2,300' Desirable 1,180' Minimum	2,300' Desirable 1,180' Minimum
Maximum Superelevation	7.00%	7.00%	7.00%	7.00%
<b>Vertical Alignment</b>				
Maximum Grade	5.00%	5.00%	3.00%	3.00%
Minimum Grade	0.5% Desirable 0.3% Minimum	0.5% Desirable 0.3% Minimum	0.5% Desirable 0.3% Minimum	0.5% Desirable 0.3% Minimum
<b>Cross-section Element</b>				
Lane Width	12'	12'	12'	12'
Median Shoulder Width	N/A	N/A	8' 4' Paved	8' 4' Paved
Right Shoulder Width	8' Paved	8' Paved	12' Paved	12' Paved
Pavement Cross-slope				
	2.00%	2.00%	2.00%	2.00%
<b>Structures</b>				
Design Loading	HL-93	HL-93	HL-93	HL-93
Minimum Under Clearance (NHS route)	16'-3" Desirable 16'-0" Minimum over	16'-3" Desirable 16'-0" Minimum	16'-3" Desirable 16'-0" Minimum	16'-3" Desirable 16'-0" Minimum
Minimum Under Clearance (railroad)	23'	23'	23'	23'



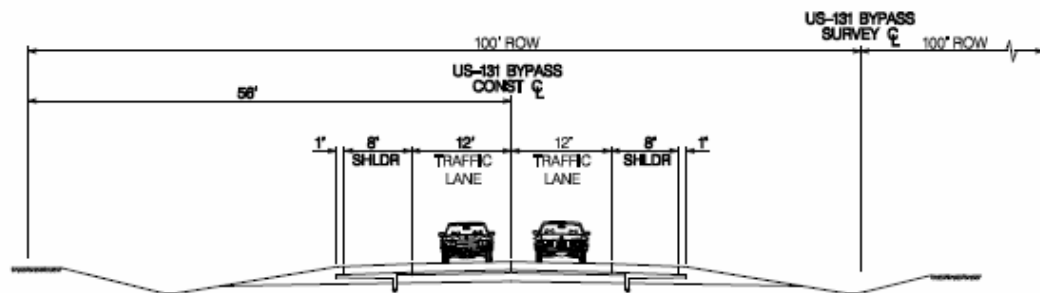
Existing US-131 Typical Two-Lane Roadway  
(South of M-60)



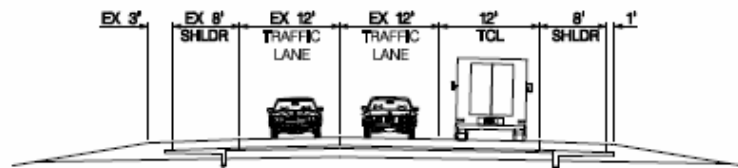
Existing US-131 Typical Four-Lane Divided Roadway  
(North of M-60)

Figures Not to Scale

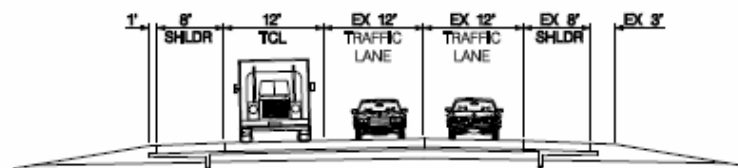
Figure 2.2 Existing US-131 Typicals



**Proposed US-131 Typical Two-Lane Roadway (Bypass)**  
Right-of-way width equals 200'.



**Proposed US-131 Typical NB Truck Climbing Lane**  
Right-of-way width equals 120'.



**Proposed US-131 Typical SB Truck Climbing Lane**  
Right-of-way width equals 120'.

Figures Not to Scale

**Figure 2.3 Proposed US-131 Typical**